

TECHNICAL REVIEW DOCUMENT
for
MODIFICATION TO OPERATING PERMIT 95OPWE001

Thermo Power and Electric, Inc.
Weld County
Source ID 1230126

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August 29, 2003

Revised October 14, 2003 to remove "Energy Factors, Inc., c/o Sithe Energies from the permit

I. Purpose:

This document establishes the decisions made regarding the requested modification to the Operating Permit for Thermo Power and Electric. This document provides information describing the type of modification and the changes made to the permit as requested by the source and the changes made due to the Division's analysis. This document is designed for reference during review of the proposed permit by EPA and for future reference by the Division to aid in any additional permit modifications at this facility. The conclusions made in this report are based on the information provided in the requests for modification submitted to the Division on August 28 and October 7, 2003, the original construction permit application submittal on August 6, 2003 and telephone conversations with the source. This narrative is intended only as an adjunct for the reviewer and has no legal standing.

Any revisions made to the underlying construction permits associated with this facility made in conjunction with the processing of this operating permit application have been reviewed in accordance with the requirements of Regulation No. 3, Part B, Construction Permits, and have been found to meet all applicable substantive and procedural requirements. This operating permit incorporates and shall be considered to be a combined construction/operating permit for any such revision, and the permittee shall be allowed to operate under the revised conditions upon issuance of this operating permit without applying for a revision to this permit or for an additional or revised construction permit.

II. Description of Permit Modification Request/Modification Type

The Operating Permit for the Thermo Power and Electric facility was issued on January 1, 1999. The facility submitted a request for a construction permit on August 6, 2003 to construct and operate a natural gas fired boiler to provide heat when the combustion turbines are not operating. Upon receipt of the construction permit application, the Division indicated to the source that the addition of the boiler could be processed as a minor modification to the operating

permit. Therefore, the source submitted a request to modify their operating permit on August 28, 2003.

Colorado Regulation No. 3, Part C, Section X.A identifies those modifications that can be processed under the minor permit modification procedures. Specifically, minor permit modifications “are not otherwise required by the Division to be processed as a significant modification” (Colorado Regulation No. 3, Part C, Section X.A.6). The Division requires that “any change that causes a significant increase in emissions” be processed as a significant modification (Colorado Regulation No. 3, Part C, Section I.B.36.h.(i)). According to Appendix D of Regulation No. 3 (Section I.F, revisions adopted July 15, 1993, Subsection I.G for modifications) the Division considers that a significant increase in emissions is the potential to emit above the PSD significance levels (40 tons/yr of NO_x). The APEN submitted with the construction permit application, indicates that at the design rate, 8760 hrs/yr of operation and using manufacturer’s emission factors that NO_x emissions from the boiler are less than 40 tons/yr. Therefore, the Division considers that this modification can be processed as a minor modification.

In addition, the Division requires that “any change that is considered a modification under Title I of the Federal Act” be processed as a significant permit modification (Colorado Regulation No. 3, Part C, Section I.B.36.h.(ii)). Appendix D of Regulation 3 describes more specifically what constitutes a modification under Title I of the Federal Act and Appendix D (Section I.F, revisions adopted July 15, 1993, Subsection I.G for modifications) indicates that a modification which triggers NSPS is considered a Title I modification. The boiler is subject to the provisions in 40 CFR Part 60 Subpart Dc (Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units). However, since the boiler can only burn natural gas as fuel, the only requirements from 40 CFR Part 60 Subpart Dc that are applicable to the boiler are recordkeeping requirements (record fuel consumption daily). Under the construction permit procedures in Colorado Regulation No. 3, Part B, no public comment period would be required to permit this boiler. Therefore, since public comment would not be required if this boiler were processed as a construction permit and because the NSPS requirements are not substantive (i.e. not an emission limitation, control requirement or design restriction), the Division considers that this modification can be processed as a minor modification.

In addition, the Division requires that “any change that requires or changes a case-by-case determination of an emission limitation or standard”. Typically such changes would be modifying a BACT or RACT limit. Since the Greeley area is now attainment/maintenance for CO, the boiler would be subject to RACT. RACT has been determined to be good combustion practices. Because of the small size of the boiler and low emissions (i.e. below 40 tons/yr of CO), no emission limitation will be included for RACT. Therefore, the Division considers that this modification can be processed as a minor modification.

The source submitted an administrative amendment to remove “Energy Factors, Inc. c/o Sithe Energies” from the permit on October 7, 2003. The current permit indicates that the permit is issued to Energy Factors. Thermo Power and Electric, Inc. directly owns the Greeley facility. While Energy Factors is the parent company of Thermo Power and Electric, Inc., Energy Factors does not directly own the Greeley facility. A name change qualifies as an administrative amendment as defined in Reg 3, Part A, Section I.B.36.a.

III. Modeling

In preparation for their construction permit application, the source had discussions with personnel from the Division’s Technical Services Program regarding whether or not modeling would be required for the boiler. Our Technical Services personnel indicated that as long as the NO_x emissions for the boiler were below 40 tons/yr and that the permit modification was minor, modeling was not warranted. Therefore no modeling is required.

IV. Discussion of Modifications Made

Source Requested Modifications

Name Change

The Division removed the references in the permit to “Energy Factors, Inc. c/o Sithe Energies” as requested in the sources October 7, 2003 letter.

S004/B004: Boiler, Manufacturer, Model and Serial No. To Be Determined, Rated at 80 mmBtu/hr, Equipped with Low NO_x Burners. Natural Gas Fired.

The source requested that approval be given to install and operate this new boiler. The Division’s analysis is as follows:

1. Applicable Requirements – The source has requested that the Division approve the construction and operation of this boiler. Since the source has requested that this boiler be processed as a combined construction/operating permit using the minor modification procedures in Reg 3, Part C, Section X, no construction permit will be issued and all applicable requirements will be incorporated directly into the operating permit with this modification. The applicable requirements for this unit are as follows:

- Opacity of emissions shall not exceed 20 % (Reg. 1, Section II.A.1).
- During specific activities, opacity of emissions shall not exceed 30% (Reg 1, Section II.A.4).

- Particulate matter emissions shall not exceed $0.5(FI)^{-0.26}$ lbs/mmBtu, where FI is the fuel input in mmBtu/hr (Reg 1, Section III.A.1.b).

For the permit, the design heat input of 80 mmBtu/hr was used in the above equation to calculate the particulate matter emission limit.

- Natural Gas consumption shall not exceed 700.8 mmscf/yr (as requested by APEN submitted August 6, 2003).
- Emissions of air pollutants shall not exceed the following limitations (as requested by APEN submitted August 6, 2003):
 - PM 5.3 tons/yr
 - PM₁₀ 5.3 tons/yr
 - SO₂ 0.4 tons/yr
 - NO_x 38.5 tons/yr
 - CO 38.5 tons/yr
 - VOC 7.4 tons/yr

Since requested emissions of SO₂ are less than the APEN de minimis level, the SO₂ emission limit won't be included in the permit.

Note that since this boiler is a true minor source, the Division does not require that monthly emission and fuel consumption limits be imposed on this source for the first year of operation as this requirement only applies for major or synthetic minor sources.

- Construction of this source must commence within 18 months of initial approval permit issuance date or within 18 months of date on which such construction or activity was scheduled to commence as stated in the application (Reg 3, Part B, Section IV.G.4.a.(i) thru (iii)).
- Within 180 days after commencement of operation, compliance with the conditions contained on this permit shall be demonstrated to the Division (Reg 3, Part B, Section IV.H.2).
- The permittee shall notify the Division, in writing, thirty (30) days prior to startup (Reg 3, Part B, Section IV.H.1).
- Since the Greeley area is now designated attainment/maintenance for CO, the boiler is subject to reasonably available control technology (RACT). RACT has been determined to be good combustion practices (Reg 3, Part B, Section IV.D.3.e.(i)).
- The boiler is subject to Regulation No. 6, Part A, Subpart Dc - Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating

Units, as adopted by reference in Colorado Regulation No. 6, Part A. Specifically the boilers is subject to the following requirements:

- o Record and maintain records of the amounts of each fuel combusted during each day (40 CFR Part 60 § 60.48c(g))
 - o Maintain records for two years (40 CFR Part 60 § 60.48c(i))
- The boiler is also subject to the requirements in 40 CFR Part 60 Subpart A – New Source Performance Standards – General Provisions, as adopted by reference in Colorado Regulation No. 6, Part A. Specifically the following will requirements will be included in the permit:
 - o Good practices (§ 60.11(d))
 - o Circumvention (§ 60.12)
 - o Records of startups, shutdowns and malfunctions shall be maintained (§ 60.7(b))
- **State-only** – Opacity of emissions shall not exceed 20% (Reg 6, Part B, Section II.C.3)
- **State-only** - Particulate matter emissions shall not exceed $0.5(FI)^{-0.26}$ lbs/mmBtu, where FI is the fuel input in mmBtu/hr (Reg 6, Part B, Section II.C.1.b)

Streamlining of Applicable Requirements

Opacity

The boiler is subject to the Reg 1 20% opacity requirement and the Reg 1 30% opacity requirement for certain specific operating conditions. The Reg 1 20% opacity requirement applies at all times, except for certain specific operational activities under which the Reg 1 30% opacity requirement applies. The boiler is also subject to the state-only Reg 6, Part B 20% opacity requirement. Reg 6, Part B, Section I.A, adopts, by reference, the 40 CFR Part 60 Subpart A general provisions. 40 CFR Part 60 Subpart A § 60.11(c) specifies that the opacity requirements are not applicable during periods of startup, shutdown and malfunction. The Reg 1 20%/30% requirements are more stringent than the Reg 6 Part B opacity requirements during periods of startup, shutdown and malfunction. While the Reg 6, Part B 20% opacity requirement is more stringent during fire building, cleaning of fire boxes, soot blowing, process modifications and adjustment or occasional cleaning of control equipment. Therefore, since no one opacity requirement is more stringent than the other at all times, all three opacity requirements are included in the operating permit. See the attached grid for a clarified view on the opacity requirements and their relative stringency.

Since this boiler burns natural gas as fuel, the Division will presume, in the

absence of credible evidence to the contrary, that these units are in compliance with all of the opacity requirements.

PM

The boiler is subject to the Reg 1 particulate matter requirements and the state-only, Reg 6, Part B particulate matter requirements. The particulate matter requirements in both Reg 1 and Reg 6, Part B are the same standard. The Reg 1 particulate matter requirements apply at all times. Reg 6, Part B, Section I.A, adopts, by reference, the 40 CFR Part 60 Subpart A general provisions. Although not specifically stated in the general provisions, the Division has concluded after reviewing EPA determinations that the NSPS standards are not applicable during startup, shutdown and malfunction, although any excess emissions during these periods must be reported in the quarterly excess emission reports, if required. Specifically, EPA has indicated (4/18/75, determination control no. A007) that when 40 CFR Part 60 Subpart A § 60.11(d) was developed "...it was recognized that sources which ordinarily comply with the standards may during periods of startup, shutdown and malfunction unavoidably release pollutants in excess of the standards." In addition, EPA has also indicated (5/15/74, determination control number D034) that "[s]ection 60.11(a) makes it clear that the data obtained from these reports are not used in determining violations of the emission standards. Our purpose in requiring the submittal of excess emissions is to determine whether affected facilities are being operated and maintained 'in a manner consistent with good air pollution control practices for minimizing emissions' as required by 60.11(d)." Therefore, the Division considers that the Reg 6, Part B particulate matter requirements do not apply during periods of startup, shutdown and malfunction. As a result, the Reg 6, Part B requirements have been streamlined out of the permit.

Monitoring

NSPS Dc requires that records be kept for a period of 2 years, while Reg 3, Part C, Section V.C.6 requires that records be retained for five (5). Therefore, the NSPS recordkeeping requirement will be streamlined out of the permit.

2. Emission Factors – In their construction permit application, the source proposed to use the following emission factors:

Pollutant	Emission Factor (lbs/mmBtu)	Source
PM	0.0149	AP-42, Section 1.4, Table 1.4-2, dated March 1998, multiplied by 2, then divided by a gas heating value of 1020 Btu/SCF. Note that the PM and PM ₁₀ emission factor is based on the total PM emission factor and the VOC emission factor is based on the total organic compounds (TOC) emission factor.
PM ₁₀	0.0149	
SO ₂	0.0012	
VOC	0.02157	

Pollutant	Emission Factor (lbs/mmBtu)	Source
NO _x	0.11	Manufacturer's guarantee of 0.11 lbs/mmBtu, converted to lbs/mmSCF based on a gas heat value of 1000 Btu/SCF
CO	0.11	

The emission factors in the above table above were converted to emission factors in lbs/mmSCF and included in the revised permit by multiplying the PM, PM₁₀ and VOC emission factor by a gas heating value of 1020 Btu/SCF (per AP-42) and multiplying the NO_x and CO emission factor by 1000 Btu/SCF (per source). Note that the lbs/mmSCF emission factors in the revised permit for PM, PM₁₀ and VOC are slightly different from those in the minor modification application submitted on August 28, 2003.

The source's requested CO and NO_x emission factors are more conservative than the emission factors in AP-42, Section 1.4, Table 1.4.1, dated March 1998. The CO emission factor in AP-42 is 84 lbs/mmSCF (0.082 lbs/mmBtu) and for NO_x, the emission factor is 100 lbs/mmSCF (0.098 lbs/mmBtu) for an uncontrolled unit, 50 lbs/mmSCF (0.049 lbs/mmBtu) for a unit with low NO_x burners and 32 lbs/mmSCF (0.0314 lbs/mmBtu) for a unit with low NO_x burners with flue gas recirculation.

3. Monitoring Plan - The Division will require that the source monitor compliance with the emission limits by calculating emissions monthly, using the approved emission factors and the monthly fuel consumption. In accordance with the requirement in NSPS Subpart Dc, the source will be required to record fuel consumption daily. Emission calculations shall be conducted monthly. Compliance with the particulate matter and opacity requirement will be presumed, in the absence of credible evidence to the contrary, whenever natural gas is used as fuel in this boiler.

Other Modifications

Generally, when processing modification requests the Division incorporates other changes in order to make the permit more consistent with recently issued permits, include comments made by EPA on other Operating Permits, as well as correct errors or omissions identified during inspections and/or discrepancies identified during the review of the modification. However, since the renewal permit application has been submitted for this facility and in the interest of processing this modification quickly, the Division will not make those changes at this time, but will make them with the renewal.